

## REMARKS

Claims 1-20 remain pending in the case.

### 102(b) Rejection

#### Claims 1, 3, 4, and 5

At paragraph 2 of the Office Action, the Examiner rejected Claims 1, 3, 4, and 5 under 35 USC 102(b) as being anticipated by Jeng. Applicant has reviewed the Jeng reference and respectfully asserts that the claimed embodiments of the present invention are not anticipated by Jeng for the following rationale.

Applicant respectfully states that independent Claim 1 recites the features of "providing on the display device concurrent viewing of both a first view of a sculpting object and a second view of the object, the first view of the object providing a full, six-degree-of-freedom orientation control of the view." Support for "providing on the display device concurrent viewing of both a first view of a sculpting object and a second view of the object, the first view of the object providing a full, six-degree-of-freedom orientation control of the view," as recited by Claim 1, is illustrated in Figure 9 of the present Application, wherein both the first view 130 and the second view 140 are concurrently shown on display 120.

Applicant has read the Jeng reference and understands Jeng to teach that a user can switch between modes with a single key stroke. Therefore, Applicant does not understand Jeng to teach a display providing multiple views of the object for concurrent viewing.

Therefore, Applicant respectfully submits that Jeng neither anticipates nor suggests the present claimed invention as recited in independent Claims 1 and traverses the rejection under 35 USC 102(b).

The Office Action states in paragraph 2 that Jeng teaches “current viewing of different views of the same object,” at paragraph 3 of page 213. It further states, that page 21 paragraph 2 discloses “two different views to be the same human brain.” However, Jeng states at paragraph 3 of page 213,

In a neurosurgical visualization system, Hinckley and coworkers [1994] embedded six degree-of-freedom trackers in a head prop and a cutting-plane prop to allow neurosurgeons to slice through a patient’s brain data by positioning and orienting the two physical objects against each other in their hands.

To summarize, paragraph 3 of page 213 discloses two different objects, which are a head prop and a cutting-plane prop, that allows neurosurgeons to visualize holding one of the objects, such as the head prop, in one of their hands, and another object, such as the cutting-plane prop, in the other hand in order to practice slicing through a patient’s brain data, which would be a part of the head prop. Therefore, Jeng neither anticipates nor suggests “concurrent viewing of both a first view of a sculpting object and a second view of the object,” as recited by Claim 1.

Because Claims 3-5 depend from Claim 1 and contain additional limitations that are patentably distinguishable over Jeng, these claims are also

considered patentable over Jeng. Therefore, Applicants respectfully submit that the basis for rejecting Claims 3-5 under 102 is traversed.

Rejections under 35 USC 103(a)

Claim 2

In paragraph 4 of the Office Action, the Examiner rejected Claim 2 under 35 USC 103(a) as being unpatentable over Jeng in view of U.S. Patent No. 6,369,834 (referred to hereinafter as "Zilles"). Applicant has reviewed the Jeng reference and respectfully asserts that the claimed embodiments of the present invention are not obvious in view of Jeng for the following rationale.

Applicants respectfully submit that Zilles does not overcome the shortcomings of Jeng. Applicants respectfully submit that Zilles, alone or in combination with Jeng, does not show or suggest "concurrent viewing of both a first view of a sculpting object and a second view of the object," as recited by independent Claim 1.

Therefore, Applicant respectfully submits that Jeng and Zilles, alone or in combination, do not show nor suggest the present invention as recited in independent Claim 1, and that Claim 1 is considered patentable over Jeng and Zilles (alone or in combination). Because Claim 2 depends from Claim 1 and contains additional limitations that are patentably distinguishable over Jeng and Zilles (alone or in combination), Claim 2 is also considered patentable over Jeng and Zilles (alone or in combination). Therefore, Applicants respectfully submit that the basis for rejecting Claim 2 under 35 U.S.C. § 103(a) is traversed.

### Claims 6-19

In paragraph 5 of the Office Action, the Examiner rejected Claims 6-19 under 35 USC 103(a) as being unpatentable over Westermann. Applicant has reviewed the Westermann reference and respectfully asserts that the claimed embodiments of the present invention are not obvious in view of Westermann for the following rationale.

Applicant respectfully states that independent Claim 6 recites,  
“a method of forming a model of a three-dimensional object comprising:  
generating a three-dimensional set of points;  
grouping the points into a plurality of three-dimensional cells;  
subdividing a cell in the plurality of cells into multiple subdivisions;  
locating adjacent cells that contact the subdivisions; and  
subdividing the adjacent cells to eliminate dangling points, wherein  
the adjacent cells are subdivided by having only one voxel added to them,  
and wherein it is unnecessary to subdivide any cells beyond the adjacent  
cells.”

The present Application supports the feature of Claim 6 “wherein the adjacent cells are subdivided by having only one voxel added to them, and wherein it is unnecessary to subdivide any cells beyond the adjacent cells” at Figures 3A through 3D of the present Application. Specifically, Figure 3C shows a cell with a plurality of subdivisions (at least 8) and figure 3D shows the adjacent cell 80 resolving the subdivisions of cell 70 while requiring no cell subdivision between any other cells adjacent to cell 80.

Applicant understands Westermann to neither teach nor make obvious the feature of “wherein the adjacent cells are subdivided by having only one

voxel added to them, and wherein it is unnecessary to subdivide any cells beyond the adjacent cells.” Applicant understands Westermann from paragraph 4 to paragraph 6 of page 3 to teach fixing cracks by constructing a radial function that guarantees that the oracle does not allow neighboring cells to differ by more than one generation.

Furthermore, Applicant understands Westermann to teach against “wherein the adjacent cells are subdivided by having only one voxel added to them, and wherein it is unnecessary to subdivide any cells beyond the adjacent cells” at paragraph 2 of page 3 because the “conforming split technique,”

turns out not to be useful for adaptive iso-surface extraction since the many tetrahedra and pyramid elements resulting from the split sometimes cause the total number of generated triangles to actually increase even above the number of triangles that would have been generated for uniform reconstruction on the finest level.

In paragraph 7 of the Office Action, the Response to Arguments section states that under MPEP 2131.05 arguments pertaining to “teaching away” are “...not germane to a rejection under 102 (or 103)”. However, this is not what MPEP 2131.05 states. In fact MPEP 2131.05 states,

Arguments that the alleged anticipator prior art is ‘nonanalogous art’ or ‘teaches away from the invention’ or is not recognized as solving the problem solved by the claimed invention, [are] not ‘germane’ to a rejection under section 102.

Therefore, the Office Action at paragraph 7 has misapplied MPEP 2131.05 to obviousness (103). To further demonstrate this point, MPEP 2143.01 states,

“Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so ...”

Therefore, the arguments presented in this reply stating that Westermann teaches away from the feature of "wherein the adjacent cells are subdivided by having only one voxel added to them, and wherein it is unnecessary to subdivide any cells beyond the adjacent cells," as recited by Claim 6, are applicable to a 103 rejection.

Applicants agree with the Office Action's statement in paragraph 5 that Westermann does not explicitly disclose "dangling points" let alone "subdividing the adjacent cells to eliminate dangling points," as recited by Claim 6. Applicants disagree with the Office Action's statement that "At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to subdivide the adjacent cells to eliminate dangling points" and respectfully requests that a reference that teaches and/or renders obvious "subdividing the adjacent cells to eliminate dangling points" be provided.

Therefore, Applicant respectfully points out that Westermann neither anticipates nor suggests the present claimed invention as recited in Claim 6 and traverses the Examiner's basis for rejections under 35 USC 103(a).

With respect to Claims 7-19, Applicant respectfully states that they are dependent on an allowable Independent Claim 6 and recite further features of the present claimed invention.

Claim 20

In paragraph 6 of the Office Action, the Examiner rejected Claim 20 under 35 USC 103(a) as being unpatentable over Westermann in view of Zhou.

Applicant has reviewed the Westermann and Zhou references and respectfully asserts that the claimed embodiments of the present invention are not obvious in view of Westermann and Zhou for the following rationale.

Applicants respectfully submit that Zhou does not overcome the shortcomings of Westermann. Applicants respectfully submit that Zhou, alone or in combination with Westermann, does not show or suggest "subdividing the adjacent cells to eliminate dangling points," as recited by independent Claim 6.

Therefore, Applicant respectfully submits that Westermann and Zhou, alone or in combination, do not show nor suggest the present invention as recited in independent Claim 6, and that Claim 6 is considered patentable over Westermann and Zhou (alone or in combination). Because Claim 20 depends from Claim 6 and contains additional limitations that are patentably distinguishable over Westermann and Zhou (alone or in combination), Claim 2 is also considered patentable over Westermann and Zhou (alone or in combination). Therefore, Applicants respectfully submit that the basis for rejecting Claim 20 under 35 U.S.C. § 103(a) is traversed.



CONCLUSION

In light of the above remarks, Applicant respectfully requests reconsideration of the rejected Claims 1-20.

Based on the argument presented above, Applicant respectfully asserts that Claims 1 through 20 overcome the rejections of record and, therefore, allowance of these Claims is respectfully solicited.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

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Respectfully submitted,

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